

VII. On *Brachynema* and *Phoxanthus*, two new Genera of Brazilian Plants.

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AMONG the North Brazilian plants collected by Mr. Spruce, are two, which have appeared to me to present some interesting anomalies, preventing their being referred absolutely to any of our Natural Orders as at present defined. I therefore beg to lay before the Linnean Society the following descriptions, accompanied by drawings carefully executed by Mr. Fitch, in the hope that their publication may be the means of further elucidating the immediate affinities of these plants.

1. BRACHYNEMA RAMIFLORUM. (TAB. XXII.)

This plant, to which I have given the name of *Brachynema*, in allusion to the short filaments of the stamens, has a foliage which reminds one of the simple-leaved *Galipeas* or *Ticoreas*, whilst the structure of the flowers is nearer that of *Ebenaceæ*. I should indeed have had little hesitation in considering it as a true *Ebenacea*, slightly anomalous in inflorescence, in the shape of the corolla, and in the hermaphrodite flowers, were it not for the leaves. These have the general form and appearance, the unequal petioles, and the evident tendency to articulation at the summit of the petioles, of several unifoliolate *Rutaceæ*. The surface of the leaf is not however covered with the minute resinous dots of most *Diosmeæ*, but the principal nerves when they approach the margin often emit a small lateral branch terminating in a gland on the margin itself, as is the case in some *Diosmeæ*. The same circumstance may however be observed in some *Euphorbiaceæ*, in a few of the Malvoid families, and in some other Orders. The inflorescence of *Brachynema*, the shape of the corolla, the almost valvate slightly contorted æstivation of its thick lobes, have nothing in them incompatible with the gamopetalous *Diosmeæ*, but here all affinity ceases. The insertion of the stamens, the structure of the ovary, the fruit with its enlarged calyx, are nearly those of *Ebenaceæ*. The only seed which I could examine was probably not quite ripe. Within a striated closely adherent coating, it only presented a uniform cartilaginous mass with a slight discoloration in the interior, in which however I failed in detecting the embryo. Outside, the longitudinal furrows of the seed show an approach to the ruminated albumen of some *Ebenaceæ*; although, on the other hand, there is nothing to preclude the supposition that the whole may be an exalbuminous embryo. The coarse fibres more or less cohering to the external furrows, appear to be detached from the endocarp of the fruit.

For the present, therefore, *Brachynema* must be considered as a doubtful *Ebenacea*, anomalous in its foliage, in its hermaphrodite flowers, in its long-tubed corolla, and in the number of stamens equal to and alternate with the lobes of the corolla.

I should add, that the flowers appearing only on the older branches of the tree, the

portions of branch bearing them are in my specimens detached from those which have the leaves. But besides that Mr. Spruce is far too careful a collector for me to suspect any accidental mismatching, the bark and wood of the flowering portions perfectly correspond with those of the leafy ones.

BRACHYNEMA.

CHAR. GEN.—*Calyx* cupuliformis, subinteger, post anthesin accrescens. *Corolla* infundibularis, tubo elongato, laciniis 5 crassis lanceolatis patentibus, æstivatione valvato-subcontorta. *Stamina* 5, brevia, ima basi corollæ v. cum corolla toro inserta, laciniis corollæ alternantia; filamentis brevi dilatato; anthera extrorsa, biloculari, connectivo apiculata, loculis longitudinaliter dehiscentibus. *Ovarium* sessile, 5-loculare. *Stigma* subsessile, 5-lobulatum. *Ovula* in loculis solitaria, pendula. *Fructus* (drupaceus?), pericarpio tenui, endocarpio crustaceo intus fibroso, unilocularis, monospermus. *Semen* lata basi affixum, sulcato-striatum, testa tenui arcte adnata. *Albumen* cartilagineum. *Embryo* ignotus (v. embryo crasso-carnosus exalbuminosus indivisus?).

Species unica B. RAMIFLORUM. Arbor, teste R. Spruce, gracilis, 30-pedalis. Rami subteretes, ligno duro, cortice scabriusculo. Folia sparsa, exstipulata, inæqualia, ovato-oblonga, anguste acuminata, integra v. obsolete sinuata, basi cuneata, membranacea, glabra, utrinque viridia, penninervia et transverse venosa, costa nervisque subtus prominentibus. Petioli majorum 4–6-pollicares, apice leviter inflexi et quasi articulati, minorum vix pollicares. Lamina majorum fere pedalis, 5 poll. lata, minorum vix 4-pollicaris. Nervi primarii a costa utrinque 6–8, versus marginem arcuate et irregulariter confluentes, hinc inde juxta marginem ramulum emittentes in margine ipso glandula parva terminantem; duo infimi oppositi, margini paralleli. Flores in ramos annotinos v. vetustiores ex axillis foliorum delapsorum nascentes, fasciculis subcymosis, 5–15-floris, sessilibus, ebracteatis. Pedicelli crassiusculi, vix lineam longi. Calyx per anthesin cupuliformis, $1\frac{1}{2}$ lin. latus. Corollæ tubus 7–8 lin. longus, extus zonis transversis intensius coloratis variegatus; limbi laciniæ crasso-triquetræ, patentibus v. recurvæ, intus linea longitudinali pilorum intra tubum plus minus decurrente notatæ. Stamina filamenta antheris breviora; pollen e granulis minutis globosis compositum. Ovarium crassum, subglobosum, vertice depresso-umbilicatum. Stigma pulviniforme, lobulis brevissimis submarginatis. Fructus in specimine depresso-globosus, 6–8 lin. diametro.

Hab. In Brasilia boreali ad cataractas fluminis Aripecurù, in fl. Amazonum juxta Obidos fluentis (R. Spruce).

2. PHOXANTHUS HETEROPHYLLUS. (TAB. XXIII., XXIV.)

Of the other genus, for which I propose the name of *Phoxanthus*, in allusion to the long pointed petals giving a tapering conical form to the bud, Mr. Spruce's specimens afford ample materials for a full illustration. In the first hasty determination for the purposes of distribution, struck by the linear petals with stamens opposite to their dilated base, and some other points of resemblance with Aublet's figure of *Mayepæa*, I had thought it probably a second species of that genus (which had already been referred to *Linociera*), and I accordingly labelled it *Linociera* (*Mayepæa*) *heterophylla*. But a closer examination showed that I was in error. In the first place, Aublet's figure is incorrect. His specimen in the British Museum has opposite, not alternate, leaves, and from Dr. Solander's notes it appears that there are two, not four, stamens, and that it is altogether a true *Linociera*. If therefore Aublet's dissections, especially fig. 4 of his Plate (t. 31), represent what he really saw, he must have had some flowers of *Phoxanthus* mixed up with those of his *Mayepæa*, and have confounded the two plants. Further, I find that Mr. Spruce's plant has not generally four petals, as was accidentally the case in a flower I

first examined, but five, although very unequal in size. There are really five stamens, of which three are reduced to mere barren scales; all are opposite to the petals and inserted with them under a small five-lobed disk, and our plant must be sought for among the disk-bearing polypetalous families with compound leaves. The form and structure of the ovary remind at once of some *Simarubaceæ*, and if that family be extended as proposed by Planchon, it may well include *Phoxanthus* also. The stamens opposite the linear petals occur in *Picramnia* (whose place among *Simarubaceæ* is however doubted by Tulasne), and in the still more anomalous *Alvaradoa*; the contortuplicate cotyledons, so remarkable in *Phoxanthus*, are also described in *Picrodendron*. The stamens, however, are very different in form from those which prevail in *Simarubaceæ*, and I have been unable to detect in our plant any of the bitter principle so universal in that family. The absence however cannot be absolutely ascertained from a dried specimen. The succulent pericarp is evidently very oily.

Mr. Spruce describes *Phoxanthus* as a slender woody plant with a stem as thick as the arm, threading among trees to a great height, or, when standing alone, forming a small tortuous tree. The branches are distant, nearly simple, the lower ones near the ground alone flowering, and these have mostly simple leaves, whilst the upper barren branches have large pinnate leaves with three to nine leaflets often near a foot long. The flowers are small and numerous in large red panicles, the petals themselves being of a pale flesh colour. He gathered it in October 1852, in the forests of the Rio Uaupès, especially near the Falls of Panuré.

PHOXANTHUS.

CHAR. GEN.—*Calyx* brevis 5-fidus; laciniis ovatis æstivatione imbricatis, 2 exterioribus vulgo minoribus, una interdum deficiente. *Petala* linearia, acutissima, basi dilatata, hypogyna. *Stamina* petalis opposita et cum iis sub disco hypogyno 5-lobo inserta; 2 fertilia filamentis brevissimis crassis, anthera biloculari, loculis connectivo crasso disjunctis rima transversali dehiscentibus; 3 sterilia squamæformia. *Ovarium* subsessile, apice brevissime bilobum, lobis vertice stigmatosis, intus biloculare. *Ovula* in loculis gemina, versus apicem anguli interioris superposita pendula. *Fructus* drupaceus, abortu unilocularis, monospermus. *Semen* unicum, hilo lato juxta basin fructus affixum; testa membranacea. *Embryo* exalbuminosus; radícula crasso-carnosa incurva ad hilum spectans; cotyledones insigniter contortuplicatæ.

Species unica PHOXANTHUS HETEROPHYLLUS. Frutex alte scandens vel arbor parva tortuosa. Rami subsimplices; inferiores floriferi juxta terram breves foliis plerisque simplicibus (unifoliolatis petiolo brevissimo); superiores steriles foliis imparipinnatis 3–9-foliolatis, petiolo 1–2-pedali. Stipulas non vidi. Foliola elliptico-oblonga, abrupte et anguste acuminata, basi rotundata v. acutiuscula, 6–12 poll. longa, 3–4 poll. lata, coriacea, glabra, penninervia, impunctata. Paniculæ axillares, amplæ, laxæ, ramis divaricatis in vivo rubris, in sicco pube minuta rufescentibus. Flores parvi in ramulos ultimos thyrsoides. Pedicelli vix semilineam longi, bractea minima suffulti. Calyx pedicello brevior, campanulatus, laciniis membranaceis margine denticulatis. Petala valde inæqualia, majora $1\frac{1}{2}$ –2 lin. longa. Æstivatio subvalvata videtur. Stamina fertilia petalis minoribus, sterilia majoribus opposita; filamenta fertiliū obovoidea; anthera biglobosa, per anthesin introrsum incumbens, post pollinem ejectum ascendenti-erecta. Drupa 9–12 lin. diametro compressa subglobosa v. leviter incurva, ad insertionem sæpe depressa. Pericarpium tenue, carnosum-oleosum. Putamen lignosum. Semen pericarpio subconforme.

Hab. In sylvis ad Rio Uaupès juxta fines Brasilie borealis (R. Spruce).

DESCRIPTION OF THE PLATES.

TAB. XXII.

Brachynema ramiflorum, a leafy and a flowering specimen : natural size.

- Fig. 1. Flower.
- Fig. 2. Corolla, cut open.
- Fig. 3. Stamen.
- Fig. 4. Calyx and ovary.
- Fig. 5. The same, vertical section.
- Fig. 6. Ovary, transverse section :—all magnified.
- Fig. 7. Enlarged calyx and fruit : natural size.
- Fig. 8. Fruit.
- Fig. 9. The same, transverse section.
- Fig. 10. Seed.

TAB. XXIII.

Phoxanthus heterophyllus, a flowering specimen : natural size.

- Fig. 1. Flower.
- Fig. 2. Petal.
- Fig. 3. Stamens and ovary, showing the largest staminodium or abortive stamen.
- Fig. 4. The same, seen from the other side, showing the two smaller staminodia and one of the lobes of the disk seen between them.
- Fig. 5. A single stamen.
- Fig. 6. Ovary and hypogynous disk.
- Fig. 7. Ovary, vertical section.
- Fig. 8. Diagram of the flower :—all magnified.

TAB. XXIV.

Phoxanthus heterophyllus, a fruiting specimen, and a pinnate leaf from a sterile branch : both natural size.

- Fig. 1. Fruit : natural size.
 - Fig. 2. The same, vertical section : somewhat magnified, as well as the three following.
 - Fig. 3. Embryo, end view, showing the large ascending radicle.
 - Fig. 4. The same, side view.
 - Fig. 5. The same, vertical section.
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